FINAL CLOSE-OUT REPORT FOR FEDERAL CREOSOTE SUPERFUND SITE SOMERSET COUNTY, NEW JERSEY

Prepared by

U.S. Environmental Protection Agency
Region 2
New York, New York

Approved by:

Walter E. Mugdan
Superfund Division Director
U.S. EPA, Region 2

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I. Introduction

This Final Close-Out Report documents the United States Environmental Protection Agency's (EPA's) completion of all response actions for the Federal Creosote Superfund Site in accordance with *Close-Out Procedures for National Priorities List Sites* (OSWER Directive 9320.2-22, May 2011).

All appropriate response actions at the Federal Creosote Superfund Site have been successfully implemented. Specifically, based upon field observations associated with EPA and the U.S. Army Corps of Engineers (USACE) oversight and the results of a final inspection of the Site on March 19, 2008, and the results of the five-year reviews completed on June 7, 2007, and May 3, 2012, it has been determined that the remedy has been constructed in accordance with the 1999, 2000, and 2002 Records of Decision (RODs), as modified by the 2006 and 2008 Explanations of Significant Differences (ESDs).

The 2000 and 2002 RODs and the 2008 ESD required the implementation of institutional controls to restrict activities that could compromise the integrity of protective covers, prevent exposure to residual soils contamination at depth, and prevent unacceptable use of contaminated groundwater. These institutional controls are all in place. It has been determined that no further response, other than long-term monitoring and five-year reviews, is anticipated. Human exposures and contaminated groundwater releases are under control.

The Site is divided into three operable units. Operable unit 1 (OU1) consisted of creosote source areas in the residential portion of the Site, operable unit 2 (OU2) consisted of residually contaminated soils in the residential area of the Site, and operable unit 3 (OU3) consisted of source areas and residually contaminated soils in the commercial property and contaminated groundwater.

II. Summary of Site Conditions

Site Location and Description

The Federal Creosote Site (Site) is located in the Borough of Manville in Somerset County, New Jersey. The 50-acre Site is bordered to the west by commercial properties that line the east side of Main Street. To the north, on the opposite side of the Norfolk

Southern railroad tracks, is the former Johns-Manville company property. The Johns-Manville property has been redeveloped for a variety of commercial and retail uses, including automobile storage, warehousing, and large retail stores. To the south, on the opposite side of the CSX Transportation tracks, is a primarily residential area known as Lost Valley. Approximately 5,000 people live within a one-mile radius of the Site. Currently, drinking water for the surrounding area is provided by a public water supply and no private drinking water wells are used.

The Site is divided into two land uses: residential (the Claremont Development, 35 acres) and commercial (the Rustic Mall, 15 acres). The Claremont Development consists of 129 single-family residential houses, which are home to approximately 350 residents. The Rustic Mall portion of the Site is zoned commercial. The Borough of Manville and the property owner are planning revitalization of the Rustic Mall, which includes a combination of commercial and residential use.

Background

The 50-acre Site was used to treat rail road ties with coal tar creosote, prior to development into the current land uses described above. Beginning in approximately 1910, the Site was operated by a company known as the Federal Creosoting Company. During operations, untreated railroad ties were delivered to the Site by rail and were processed in a treatment plant located on the southwest western portion of the Site. Coal-tar creosote was applied to the railroad ties in this area. Treatment residuals from the plant were discharged into two unlined canals. One canal conveyed the flow of the treatment residuals to the northern portion of the property for a distance of approximately 375 feet, where the canal contents entered an unlined lagoon. The other canal directed the flow of treatment residuals toward the southern portion of the property, where the contents of this canal spilled into another unlined lagoon located approximately 1,500 feet from the treatment plant. After treatment, railroad ties were moved from the plant to the central portion of the property, referred to as the drip area, where the excess creosote dripped from the treated wood onto the ground. Creosoting material and contaminated soil associated with the wood treating facility were not removed prior to construction of the Claremont Development and Rustic Mall.

Land use patterns on the Federal Creosoting Company property remained the same until the mid-1950s, when the wood treatment plant ceased operations and was dismantled. During the early through mid-1960s the property was re-developed. The area that formerly housed the treatment plant was developed into the 15-acre commercial and retail property known as the Rustic Mall. The remaining 35 acres of the former Federal Creosoting Company property, including the drip area, canals and lagoons, were developed into the Claremont Development.

In April 1996, the New Jersey Department of Environmental Protection (NJDEP) responded to an incident involving the discharge of an unknown liquid from a sump located at one of the Claremont Development residences on Valerie Drive. A thick, tarry substance was observed flowing from the sump to the street. In January 1997, the

Borough of Manville responded to a complaint that a sinkhole had developed around a sewer pipe in the Claremont Development along East Camplain Road. Excavation of the soil around the pipe identified a black tar-like material in the soil. Subsequent investigations of these areas revealed elevated levels of contaminants consistent with creosote.

Following the discovery of this material, NJDEP, with technical assistance from EPA, began an investigation of the Site. In April and May 1997, air samples were collected inside the majority of homes in the Claremont Development. With the exception of one house, the analysis of these samples indicated that the Site-related contaminants were not present in indoor air at elevated levels.

In October 1997, EPA's Environmental Response Team initiated a Site investigation on properties believed to contain creosote contamination based on analysis of historical aerial photographs, as well as input from residents. Over 100 surface and subsurface soil samples were collected. These sampling results indicated that the canals and lagoons still existed beneath the Claremont Development, and that the contamination was extensive.

NPL Listing

The Site was proposed for the National Priorities List (NPL) on July 27, 1998, and was formally placed on the NPL on January 19, 1999.

Removal Action

In January 1998, responsibility for the Site was transferred from NJDEP to EPA. In July 1998, EPA initiated a removal action at 11 residential properties to temporarily cover areas that contained higher surface soil levels of carcinogenic polycyclic aromatic hydrocarbons (PAHs) in exposed surface soils. As an interim action, sod was placed over bare areas in lawns and mulch was placed over exposed soils in garden beds.

Engineering Evaluation/Cost Analysis and Remedial Investigation/Feasibility Studies

EPA conducted an Engineering Evaluation/Cost Analysis (EE/CA) for OU1 utilizing the results of sampling initiated in October 1997. The EE/CA evaluated options for the removal of creosote source areas (subsurface canals and lagoons) located in the residential development. The EE/CA was completed in April 1999. EPA concluded that the EE/CA was sufficient documentation to proceed to selecting a remedy for this portion of the site and, after release of a Proposed Plan and receiving public comment, a Record of Decision (ROD) for OU1 was signed on September 28, 1999.

Under the remedial investigation/feasibility study (RI/FS) process, EPA conducted a focused feasiblity study (FFS) for OU2 to determine the nature and extent of residual levels of creosote contamination associated with surface and subsurface soil within the

residential development and to identify remedial alternatives to address contaminated soil. The FFS found that soils contained residual levels of creosote components, PAHs, in the majority of the residential properties. The RI/FS was completed in April 2000 and a ROD for OU2 was signed on September 29, 2000.

For OU3, EPA conducted a FFS for the Rustic Mall soils and an RI/FS for the groundwater, to determine the extent of subsurface soil contamination on the commercial portion of the Site, the nature and extent of Site-wide groundwater contamination, and to provide remedial alternatives to address these media. The RI/FS for groundwater was completed in June 2001, and the FFS for the commercial property soils was completed in August 2001. A ROD for OU3 was signed on September 30, 2002.

Remedy Selection

The OU1 ROD, signed in September 1999, established the following remedial action objectives (RAOs) for OU1:

- clean up the canal and lagoon source areas to levels that will allow for unrestricted land use;
- remove as much source material as possible in order to minimize a potential source of groundwater contamination.

The remedy included:

- permanent relocation of residents from certain properties within the canal and lagoon source areas, and temporary relocation where necessary to implement the remedy;
- excavation of source material from the canal and lagoon source areas, backfilling with clean fill, and property restoration as necessary; and
- transportation of the source material for off-site thermal treatment and disposal.

The OU2 ROD, signed in September 2000, established the following RAOs:

- prevent human exposure, via direct contact, with contaminated soils, considering the current and future residential site use;
- prevent future impacts to underlying groundwater quality by contaminated soils;
- prevent exposure and minimize disturbance to the Claremont Development residents, and the surrounding community of Manville, during implementation of the remedial action.

The remedy included:

- excavation of soils containing PAHs in excess of site-specific remediation goals from an estimated 82 properties, backfilling with clean fill, and property restoration as necessary, and
- transportation of the contaminated soil off site for disposal, with treatment as necessary.

The OU3 ROD, signed in September 2002, established the following RAOs for soils and groundwater:

- prevent human exposure via direct contact, inhalation, and ingestion of contaminated soils, considering the future potential residential site use;
- prevent future impacts to underlying groundwater quality by contaminated soils that can act as a continuing source of groundwater contamination; and
- prevent exposure and minimize disturbance to the Rustic Mall occupants and consumers, and the surrounding community of Manville, during implementation of the remedial action.
- prevent ingestion and direct contact with groundwater that has contaminant concentrations greater than the Applicable or Relevant and Appropriate Requirements (ARARs);
- minimize the potential for additional off-site migration of groundwater with contaminant concentrations that exceed the ARARs;
- minimize the potential for transfer of groundwater contamination to the other media (e.g. ,surface water) at concentrations in excess of ARARs.

The soil remedy included:

- Excavation of soils containing PAHs in excess of site-specific remediation goals on the Rustic Mall, backfilling with clean fill, and property restoration as necessary; and,
- Transportation of the contaminated soil off site for disposal, with treatment as necessary.

As described in more detail in the Decision Summaries of the OU2 and OU3 RODs, the Selected Remedy would leave residual levels of PAHs (but not source material as defined by the September 1999 Record of Decision) at depths greater than approximately 14 feet below the ground surface in the Rustic Mall. The backfilled clean fill would act as a barrier or "engineering control" to prevent contact with any residual contamination. In addition, a deed notice would be required to prevent direct contact with any remaining residual soil contamination.

The groundwater remedy included:

- Implementation of a long-term groundwater sampling and analysis program to monitor the concentrations of creosote components in the groundwater at the site, to assess the migration and attenuation of the creosote in groundwater over time; and,
- Institutional controls to restrict the installation of wells and the use of groundwater in the vicinity of the contaminated groundwater.

The evaluation of remedial alternatives for remediation of the dense nonaqueous phase liquid creosote contamination, including contamination found in the fractured bedrock aquifer, concluded that no practicable alternatives could be implemented. As a result, EPA invoked an ARAR waiver for the groundwater at this site due to technical impracticability (TI). The area for the TI waiver covers approximately 119 acres. The

area includes three distinct subareas: the north off-site subarea, the on-site subarea, and the south off-site subarea (see Figure 1). The TI waiver includes both the overburden aquifer and the bedrock aquifer within the area. The contaminants for which the ARAR apply include: acenaphthene, benzene, naphthalene, 2,4-dimethyl phenol, benzo(a) anthracene, benzo(a)pyrene, benzo(k) fluoranthene, fluorine, chrysene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene.

Two ESDs were prepared to document significant changes to components of the selected remedies. The first ESD provided an explanation of the increase in the estimated costs for the OU1, OU2 and OU3 remedies. A second ESD provided an explanation of the application of institutional controls, in some circumstances, at depths shallower than anticipated in the OU2 ROD.

Design Criteria

The design criteria consisted of the removal of creosote waste that was a source of groundwater contamination. In addition, design criteria also specified that residually contaminated soils exceeding the Site-specific remediation goals would be removed to a depth of approximately 14 feet and transported off-site for treatment and/or disposal according to the RCRA Land Disposal Requirements. These Site-specific remediation goals consisted of seven PAHs, which are the primary contaminants of concern found in creosote-contaminated soils.

Remedial Construction Activities

As noted above, the site was divided into three OUs.

The OU1 remedial action included removal of source material from 29 residential properties and required the permanent relocation of 21 OU1 property owners, and the demolition of 18 homes.

The remedy was implemented as a fund-lead. In October 1999, EPA entered into an interagency agreement with the Baltimore District Real Estate Division of the USACE to perform acquisition and relocation activities at the Site. In July 2000, EPA entered into an interagency agreement with the Kansas City District USACE to perform the remedial action at the Site. The contracts for the remedial action were awarded by the Kansas City District USACE and then transferred to the New York District USACE for management of the construction work. In October 2000, USACE's selected demolition contractor, Cape Environmental, Inc., mobilized equipment at the Federal Creosote Site to begin demolition of residential houses located above or adjoining creosote waste lagoons and canals. In December 2000 USACE's remediation contractor, Sevenson Environmental Services, Inc., mobilized on Site.

The cleanup of OU1 was divided into three phases. Phase 1 focused on the cleanup of the southern lagoon; Phase 2 focused on the cleanup of the northern lagoon and canal; and Phase 3 cleanup efforts were focused on the southern canal.

The OU1 Phase 1 remedial action involved temporary relocation of one family, the purchase of eight residential properties and permanent relocation of the residents, demolition of eight single-family homes, and excavation and removal of 64,000 tons of soil from the southern lagoon area to off-site treatment and disposal facilities. Soil requiring treatment was sent to the Bennett Environmental, Inc., hazardous waste incinerator in Saint Ambrose, Quebec, Canada; soils requiring subtitle C disposal were sent to the Chemical Waste Management hazardous waste landfill located in Model City, New York. Remediation of Phase 1 was completed in June 2002. Ownership of these eight properties was transferred from EPA to NJDEP in July 2003. NJDEP sold these properties through public auction in the spring of 2008, and these properties were subsequently redeveloped into single-family residences.

The OU1 Phase 2 remedial action included the acquisition of eight residential properties and the permanent relocation of residents from the eight properties located over the northern lagoon and canal. The houses on the eight lots were demolished and excavation of creosote-contaminated soil from this northern lagoon and canal started in April 2002. Excavation on this phase reached a depth of 35 feet below the ground surface. Approximately 115,600 tons of soil have been excavated and shipped off Site to treatment and disposal facilities previously mentioned. These properties have been backfilled with clean soil and have been restored. The United States government currently owns the eight lots and, through the USACE, has placed the properties up for sale.

OU1 Phase 3 remedial action included the excavation and off-site disposal of 30,605 tons of contaminated soil from 13 residential properties and roadways located on the buried southern creosote canal. OU1 Phase 3 included the temporary relocation of three families, permanent relocation of residents from five properties built over a portion of the buried southern creosote waste canal, and the demolition of two of these properties. After remediation and restoration, all of the OU1 Phase 3 properties were sold by EPA and returned to residential use. The two properties that were demolished were redeveloped into single-family residences.

The remediation of OU2 was divided into two phases. The OU2 Phase 1 remedial action consisted of soil removal at 14 residential properties that surrounded the southern lagoon area (OU1 Phase 1). The OU2 Phase 1 remedial action involved no permanent relocations and no demolitions. The remedial action of this phase started in February 2002. By June 2002, 8,957 tons of soil had been excavated, treated and/or disposed off Site; the 14 properties were completely restored; and temporarily relocated residents returned to their homes.

The OU2 Phase 2 remediation began in June 2003. Cleanup activities occurred on 50 residential properties and portions of residential roadways. The OU2 Phase 2 remedial

action involved two permanent relocations and no building demolitions. The remediation of a day care center was included in this phase. In August 2001, the day care center playground was remediated and in 2006 the day care center parking lot was remediated. The remedial action of OU2 Phase 2 resulted in the excavation and off-site disposal (with treatment as necessary) of 58,984 tons of soil.

Remediation of OU3 soils began in August 2005. After excavation was started by EPA, the Rustic Mall owner demolished all buildings on their property except for a bowling alley. The property owner agreed to demolish the buildings above the foundations, which were not contaminated, to serve the dual purpose of clearing the area for the remedial action and initiating property redevelopment. EPA excavated creosote waste in accordance with design documents, including source material found below the footprints of the former Rustic Mall buildings. Source material and residual levels of creosote were excavated from the Mall property. Approximately 176,000 tons of soil were excavated and shipped off site for treatment and/or disposal. The excavation of the OU3 soils was completed in November 2007.

The first round of long-term monitoring of Site groundwater was started in November 2005, as required by the OU3 ROD. Levels of PAHs in groundwater have, in general, declined when compared to the initial groundwater sampling performed prior to the remediation of the source areas.

On March 19, 2008, a pre-final inspection of the soil remedy was conducted by EPA, USACE and the NJDEP. No major deficiencies were identified during the inspection, a punch list of minor items was developed. As the items on the punch list were minor in nature, the pre-final inspection served as the final inspection.

Based upon the results of the final inspection, EPA has determined that the construction activity for the entire Site has been completed, the remedy has been implemented consistent with each of the RODs, as modified by the ESDs, and the contractors have constructed the remedy in accordance with the remedial design plans and specifications.

Institutional Controls

Institutional controls have been established for the groundwater and, where appropriate, soils at the Site.

The OU3 ROD required the establishment of a Classification Exception Area (CEA) for the area of groundwater contamination. The CEA was established to provide notice that the constituent standards for a class IIA aquifer classification are not or will not be met in the area of the Federal Creosote Site and that designated aquifer uses are suspended in the affected area for the term of the CEA. Additional monitoring wells were installed to delineate the CEA, and the CEA was established in January 2010.

Deed notices were applied at the Site to prevent exposure to residual contaminants in soils that were not excavated as part of the remediation. The OU2 ROD anticipated the

use of deed notices on 23 properties where residual contamination (not source material) was left at depths greater than approximately 14 feet. As documented in the 2008 ESD, the implemented remedy differed from the ROD by use of deed notices at a number of properties where residual contamination remained between two feet and 14 feet in depth. Residual contamination was not removed between these depths in order to preserve the structural integrity of houses.

During the implementation of the remedy, all source material encountered in the residential development was removed and residual contamination above cleanup goals was left beneath 21 properties. All 21 residential property owners applied deed notices to their properties where residual contamination remained at levels exceeding the remedial goals established for the Site. Consistent with the expectations of the ROD, deed notices were applied to six properties where residual contamination remains below approximately 14 feet. The remaining 15 properties requiring deed notices have residual contamination shallower than 14 feet. The residual contamination remains at depths that are inaccessible through normal residential activities. Property owners are required to maintain the property in a manner that ensures the deed notice continues to be protective. NJDEP is to conduct biennial inspections and certify the continued protectiveness of all residential properties containing deed notices.

In addition to residential properties, on September 2, 2010, the Borough of Manville applied deed notices to portions of Borough roads that contained residual levels of creosote above remediation goals pursuant to the 2008 ESD.

A deed notice was also required on the Rustic Mall commercial property. The owners applied a deed notice to this property on December 22, 2011, in accordance with the remedy selected in the OU3 ROD. The commercial property owner is responsible to conduct biennial inspections and provide certification to NJDEP that specifications of the deed notice continue to be protective.

Community Relations Activities

A very high level of community concern was demonstrated by residents, commercial property owners, business owners, and borough officials at the time the Site was discovered in 1997. This level of community concern extended to the completion of cleanup activities in 2008. EPA used a number of public outreach tools to interact with community members.

Initially, public meetings were used to convey information to the community. At these meetings, residents were informed of plans for indoor air sampling and soil sampling on their properties. As results of the sampling events were produced, EPA held public availability sessions in which EPA representatives met with residents one-on-one to discuss the sampling results. As with the public meetings, these public availability sessions were well attended and preferred by many members of the community. A Community Advisory Group (CAG) comprised of residents from the Claremont Development was formed early in the project. The CAG obtained information from EPA

and provided community input on the implementation of field activities associated with investigations, design and remedial construction. As the project moved through the remedial investigation to the remedial design and remedial action, the on-site presence of equipment and contractor personnel associated with these activities gained higher visibility and became more intrusive to the community. EPA recognized the need to increase community relations activities, and provided frequent fact sheets to residents and business owners. Informational fact sheets were distributed immediately before field activities were to take place in an area of the community. The fact sheets informed the community of Site activities such as utility mark-offs, road closures, equipment to be used for upcoming work, number of personnel involved in the work and the duration of the work as well as upcoming meetings. Since the fact sheets could be produced quickly and delivered door-to-door, they were used to convey valued information to community members on short notice. In addition, EPA distributed periodic newsletters informing the community of cleanup progress and plans for future cleanup activities. EPA held multiple interviews with different media (newspaper, television and radio news) to report on progress of the Site investigation and cleanup activities. Press events were also held on occasion to announce major milestones of the project. Meeting one-on-one with residents at their homes was a critical component of community relations activities at this Site. A wide range of issues were addressed at these meetings such as access agreements, property-specific plans for upcoming environmental testing and remediation, interpretation of sampling results, permanent and temporary relocation assistance, and residents' concerns regarding intrusive remediation of their properties.

Site Redevelopment

To implement the remedy, EPA purchased and demolished houses on 18 residential properties. Ten of these properties have been sold and have been redeveloped as single-family residences. The remaining eight residential properties have been placed up for sale by EPA. All residential properties have been cleaned up to residential standards to allow for residential reuse.

The 15-acre commercial property has been included in the Borough of Manville's redevelopment zone. All buildings on the 15-acre commercial property at the Site, except for a bowling alley, were razed by the commercial property owners to accommodate redevelopment plans. EPA's remedial action of the commercial property immediately followed the building demolition conducted by the property owners. The Rustic Mall's redevelopment plan calls for mixed commercial and residential reuse of the property, and the implemented remedy supports this land use.

III. Monitoring Results

The remedial action provided for a rigorous sampling and analysis program. Specifically, sampling was required and implemented to protect on-site residents and on-site workers, and to confirm compliance with RAOs. Daily real-time air monitoring was conducted within the perimeter of the remediation area to detect and quantify total volatile organic

compounds and respirable particulates. In addition, confirmatory soil samples were taken for Site contaminants wherever additional contamination was suspected or known to occur. Samples of backfill were analyzed to ensure the NJDEP's soil quality requirements were met.

In addition to air and soil sampling conducted during all phases of the remediation, the OU3 ROD called for long-term groundwater monitoring. The objective of the long-term groundwater monitoring is to assess the migration and attenuation of creosote in groundwater over time.

IV. Summary of Operation and Maintenance

Operation, maintenance and monitoring activities at the site include: maintenance of eight EPA-acquired residential properties; sale of the eight remaining EPA-acquired residential properties; maintenance of the institutional controls; long-term, on-site and off-site groundwater monitoring; and adjustments and/or modifications to the groundwater monitoring systems.

As part of the monitoring program, groundwater will continue to be sampled to monitor plume properties, including its extent over time to verify that the plume will not expand or pose an unacceptable risk to human health and the environment.

To date, nine rounds of groundwater sampling events have been completed in the overburden and the intermediate and deep bedrock zones.. The first two rounds occurred in 1999 prior to the excavation of source material and contaminated soil at the former lagoons and canals. The long-term monitoring of groundwater was initiated in 2005 by sampling 30 monitoring wells and has continued on an annual basis. In 2007, 18 new wells were added to the monitoring well network to replace monitoring wells abandoned during soil remediation and to further refine groundwater quality monitoring. In 2008, based on historical analytical results, contaminant distribution, and monitoring well location, 28 wells were designated to be sampled on an annual basis.

Contaminant concentrations have decreased in the majority of monitoring wells sampled since 1999 within the TI zone. The removal of source material through the remedial action, and the aging of creosote (being released for more than 60 years) may result in the remaining fraction of contaminants to be less soluble and less mobile. This is consistent with the limited detections of creosote-related contaminants from monitoring wells downgradient of the sources. In addition, monitoring wells outside of the TI zone do not show contaminant concentrations above federal, state or risk-based levels. Therefore, data evaluation supports that the plume is stable and concludes that it is not migrating outside the footprint of the TI zone. Based on the evaluation of natural attenuation parameters, the geochemical characteristics of the groundwater in the vicinity of the remaining creosote source areas indicate the occurrence of natural attenuation via the anaerobic pathway, though not to a degree that would likely result in the aquifer reaching ARARs in the foreseeable future.

V. Demonstration of Cleanup Activity QA/QC

The Remedial Action Reports for OU1 Phase 1 dated July 2005, OU1 Phase 2 dated August 2008, OU1 Phase 3 dated August 2006, OU2 Phase 1 dated July 2005, OU2 Phase 2 dated August 2008, and OU3 dated August 2008, found that the construction activities at the Site were consistent with the approved construction plans (Design Reports, Site Management Plan, Sampling Analysis and Monitoring Plan, Perimeter Air Monitoring Plan, De-watering Plan, Waste Management Plan, Excavation and Handling Plan, Health and Safety Plan, and Quality Assurance Project Plan).

The construction contractor adhered to the approved Contractor Quality Control Plan. The construction Quality Assurance Project Plan (QAPP) incorporated all USACE and EPA requirements. All confirmatory inspections, independent testing, and evaluations of materials and workmanship were performed in accordance with the construction drawings, technical specifications and QAPP. Construction quality assurance was performed by the USACE. The EPA remedial project manager visited the Site on a weekly basis, and various state regulators visited the Site approximately once every three months during construction activities to review construction progress and evaluate quality assurance/quality control (QA/QC) activities.

Groundwater monitoring has been conducted in accordance with the EPA-approved Groundwater Monitoring Program. The long-term groundwater monitoring called for in the OU3 ROD, was instituted to collect data on contaminant concentrations and plume properties at the Site. A Sampling and Analysis Plan, Field Sampling Plan, and a QAPP have been developed to execute the long-term groundwater monitoring.

The QA/QC program used throughout the remedial actions was rigorous and in conformance with EPA standards; therefore, EPA has determined that all analytical results are accurate to the degree needed to assure satisfactory execution of the remedial actions, and that they are consistent with the ROD and the remedial design plans and specifications.

VI. Five-Year Review

Hazardous substances, pollutants, or contaminants will remain at the Site above levels that allow for unlimited use and unrestricted exposure. In accordance with CERCLA Section 121 (c), the remedies at the Site will be reviewed no less than every five years. The first five-year review was completed in June 2007. A second five-year review was completed on May 3, 2012. This second five-year review determined that the implemented actions at the site currently protect human health and the environment because soil excavation activities and institutional controls prevent direct exposure to contaminated soils. The next five-year review will be completed by May 2017.

VII. Site Completion Criteria

This Site meets all the site completion requirements as specified in OSWER Directive 9320.2-22, *Close Out Procedures for National Priorities List Sites.* The implemented remedies achieve the degree of cleanup and protection specified in the RODs for all pathways of exposure. Specifically, all actions specified in the 1999, 2000, and 2002 RODs have been implemented. Excavations of source material and soils exceeding the Site-specific cleanup goals have been completed and have been backfilled with clean fill. Confirmatory sampling verifies that the remedial activities have achieved the ROD cleanup objectives outside the deed restricted areas. Institutional controls are in place to further prevent potential exposures to the public. Groundwater ARARs were waived through a TI waiver within the overburden and bedrock zones of the 119-acre TI area. The plume is stable and contaminants are not detected above federal, state or risk-based levels outside of the TI zone. All selected remedial and removal actions, RAOs and associated cleanup goals are consistent with agency policy and guidance.

The continuing efforts at the Site are the annual long-term groundwater monitoring activities, biennial inspections and certifications for deed-noticed properties, and conducting future five-year reviews. A bibliography of all documents relevant to the completion of the work at the Site under the Superfund program is attached.

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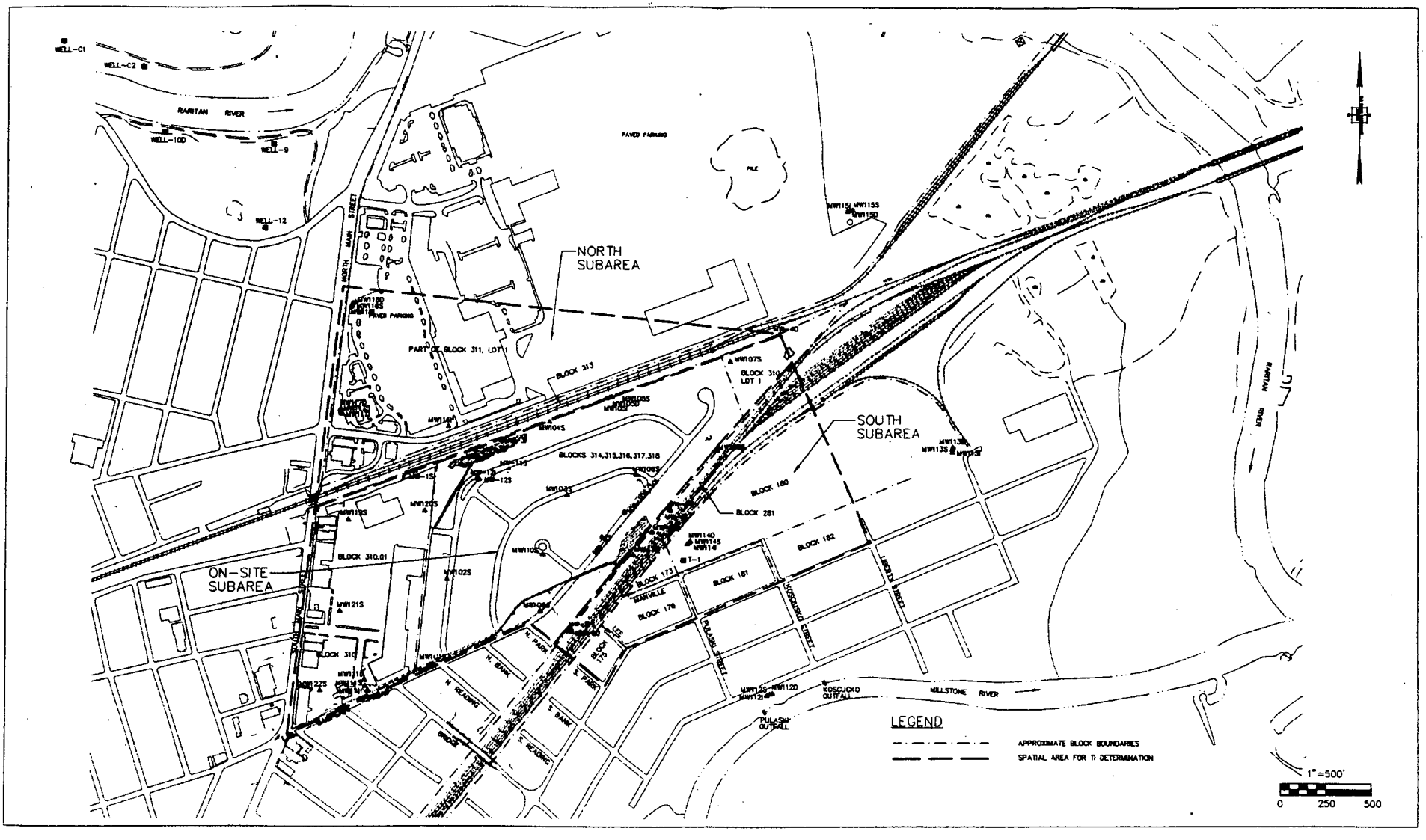

FEDERAL CREOSOTE SUPERFUND SITE
MANVILLE, NEW JERSEY

FIGURE 1
SPATIAL AREA FOR TECHNICAL IMPRACTICABLITY DETERMINATION
JUNE 2002

CDM